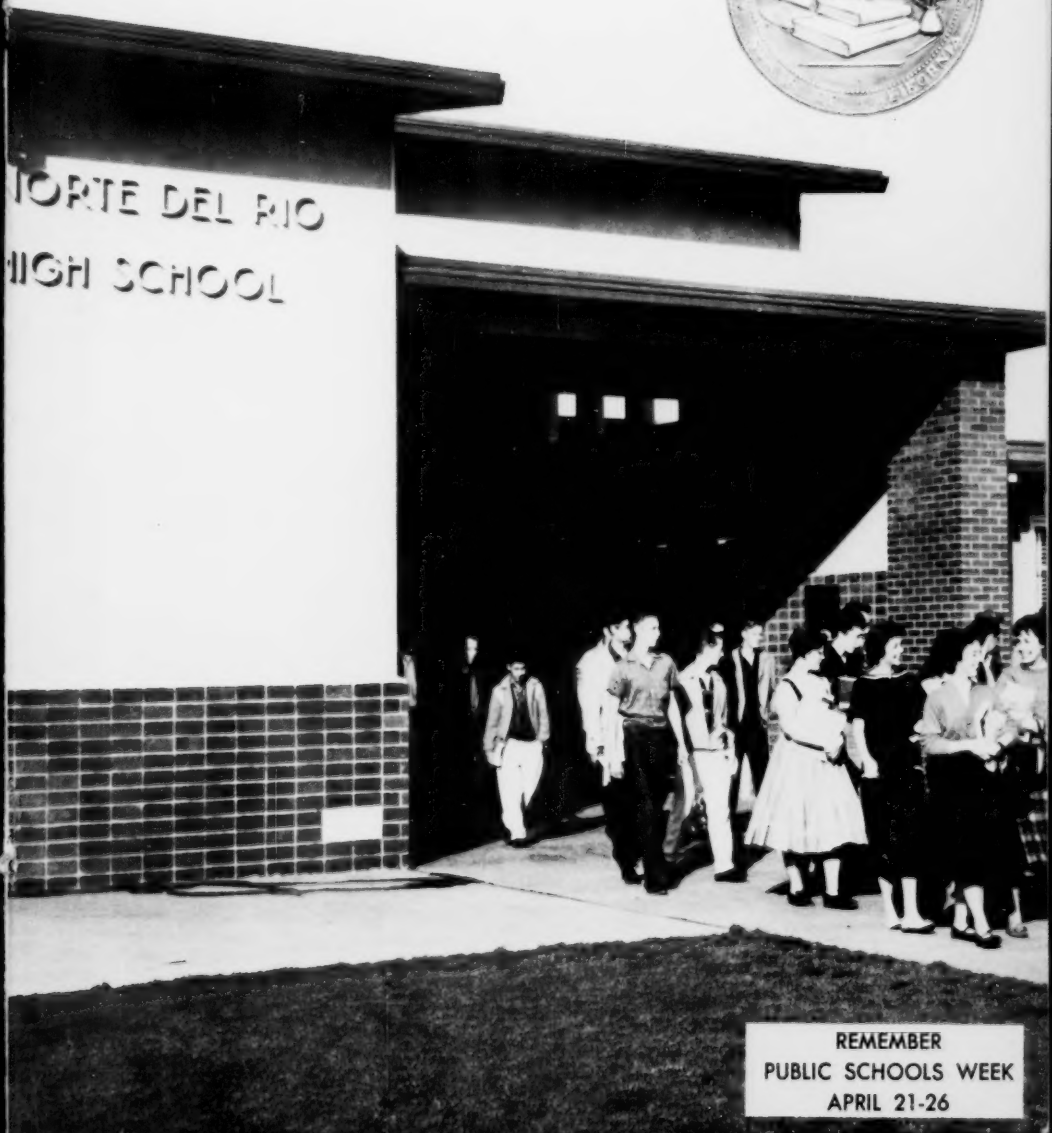
CALIFORNIA SCHOOLS

APRIL, 1958



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MABEL E. KINNEY, MEMBER
CALIFORNIA STATE BOARD OF EDUCATION

Mabel Elizabeth Kinney was appointed to the California State Board of Education in 1955, and reappointed in 1958. In accepting the responsibility of this membership, Dr. Kinney brought to the Board a rich background of experience in education, government, and social and industrial welfare.

Dr. Kinney was born in Ovid, Michigan, where she completed both elementary school and high school. Following her high school graduation, Dr. Kinney graduated from the Newman School for girls, the Kaufman Conservatory of Music, and the Povan School of Music, and attended the Thomas Normal Training School in Detroit.

She holds the bachelor's degree, the master's degree, and the Doctor of Religious Science degree from the College of Religious Science, Los Angeles.

Dr. Kinney's experience in government includes serving the state as Chief of the Division of Industrial Welfare and as a member of the Industrial Welfare Commission. During the early thirties she served as chairman of the Code Committee for Motion Picture Extras, an appointment made by the late President Roosevelt. She has also been, and continues to be, an ardent worker for good government.

Dr. Kinney served many years as legislative chairman for the State Federation of Women's Clubs. She has made extensive studies of governmental operations, has taught numerous classes in government, and has given lectures on government throughout the United States.

Mention must be made of the fact that Dr. Kinney is an accomplished musician and that she has sung in concerts in many of the leading cities in this country. At present, she is leading a busy and purposeful life, one that involves active participation in the work of her church, women's clubs and music organizations. In addition to being a member of the State Board of Education, Dr. Kinney is at present Legislation and Government Chairman for the California Federation of Women's Clubs, a director of the Cancer Control Association, a trustee for the American Renewal Foundation, President of the Women's Club of the Church of Religious Science, and President of the Congregational Council of the Church of Religious Science, Los Angeles.

Dr. Kinney has traveled extensively both at home and abroad. She and her husband, Thornton Kinney, have their home in Los Angeles.

LEGISLATIVE RESOLUTION RELATING TO DEATH OF DR. FRANK M. WRIGHT

On February 4, 1958, both houses of the State Legislature adopted Assembly Concurrent Resolution No. 14, introduced by Assemblyman Edward M. Gaffney of the twenty-fourth district, San Francisco, relative to the recent death of Dr. Frank M. Wright. The text of the resolution follows:

WHEREAS, The Members of the Legislature have learned with deep regret of the passing of Dr. Frank M. Wright on November 27, 1957; and

WHEREAS, Dr. Wright, a man of exceptional leadership, filled so ably during the last 10 years of his life the position of Associate Superintendent of Public Instruction and Chief of the Division of Public School Administration in the California State Department of Education; and

WHEREAS, Dr. Wright, who moved to California as a child with his parents and attended elementary and high schools in the Imperial Valley, received his bachelor of arts degree from Whittier College in 1916, and was subsequently awarded the degrees of master of arts and doctor of education by the University of Southern California; and

WHEREAS, He entered his chosen career in the field of education as a teacher at Santa Paula High School in Ventura County and later transferred to the El Monte High School, where his outstanding teaching and administrative abilities won for him election as District Superintendent of the El Monte School District; and

WHEREAS, He served as district superintendent from 1925 to 1947 when he was appointed Associate Superintendent of Public Instruction which position he held for the remainder of his life; and

WHEREAS, During his career he held office in numerous professional educational organizations, serving as President of the Los Angeles County School Administrators Association, President of the Association of California School Superintendents, and chairman for many years of the Finance Committee of the State Council of Education; and

WHEREAS, In addition to his vocational activities he was an active participant in both civic and fraternal organizations, having served at various times as President of the Chamber of Commerce and the Lions Club in El Monte, and Past Master of the Masonic Order; and

WHEREAS, The State has suffered a severe loss in the death of this man whose wide experience and thorough knowledge of school administration problems made him an invaluable officer of the Public School System; now, therefore, be it

Resolved by the Assembly of the State of California, the Senate thereof concurring, That the members hereby pay tribute to Dr. Frank M. Wright for his many years of devoted service to the State, and express their sincere sympathy to the members of his family on their bereavement; and be it further

Resolved, That the Chief Clerk of the Assembly is directed to transmit a suitably prepared copy of this resolution to Mrs. Frank M. Wright.

SCIENCE AND MATHEMATICS IN CALIFORNIA PUBLIC SCHOOLS

Adapted by FRANK B. LINDSAY, *Chief, Bureau of Secondary Education,* from material prepared by ESTER K. NELSON, *Consultant in Elementary Education,* THOMAS A. SHELLHAMMER, *Consultant in Education Research,* HUGH G. PRICE, *Consultant in Junior College Education,* and ARTHUR D. BROWNE, *Consultant in State College Curricula*

Science and mathematics are taught in California public schools at all educational levels. Both are introduced in the beginning stages of elementary school, in their most simple forms and from this point onward are developed progressively, in relation to the ability, needs, and objectives of the individuals at each successive educational level.

Science and Mathematics in the Elementary Schools

A wide variety of physical and biological science topics are studied in the program of the elementary school. Science instruction is planned to help children gain knowledge and understanding of such topics as Conditions Necessary to Life, Physical and Chemical Forces, Living Things, The Earth, Beyond the Earth, and Man's Attempt to Utilize His Environment. The topics studied from kindergarten through grade eight are presented so as to be appropriate to the level of understanding and individual capabilities of children in the various grades. The science content is organized in textbooks and courses of study under titles such as the following:

What Life Needs
Weather Changes
Sound
Gravity
Where We Get Our Energy
Earth, a Part of the Solar System
The Vastness of Space
Possibilities of Space Travel
Forces Operating on the Earth
Wise Utilization of Natural Resources

The Science Program

The California State Department of Education has supplied the public elementary schools with science textbooks and teachers manuals for the past 14 years. At present 54 booklets on science topics are also supplied by the state. The State Curriculum Commission has recommended to the State Board of Education for 1959 adoption, science textbooks and teachers manuals for grades one through eight, and 93 additional science books.

The furnishing of science texts is tantamount to a directive to school districts to include science in the elementary school curriculum.[1] Science programs have been strengthened by permitting school districts

[1] Education Code Sections 356, 10031, 11021, 11024, 13228.

to conduct programs and classes in outdoor science education and conservation education.[2]

The county superintendents of schools, and the California school districts have developed approximately 500 teacher guides and courses of study on elementary science. In these curriculum materials content is organized by major science topics and grade levels. Descriptions of special constructions required for certain science projects, descriptions of processes useful for science instruction and learning, and of science experiments are included.

Elementary school teachers, kindergarten through grade six, are supplied by the California State Department of Education with guides prepared by the department. The guides assist teachers in organizing curriculum material for their classes and in planning the most effective ways to have children utilize their time in school.

Teachers Guide to Education in Early Childhood contains many suggestions for conducting a science program in kindergarten through grade three. The suggested list of science materials and equipment for these grades includes 91 items useful in biological and physical science study. The general purpose of the science instruction program is exemplified by the following quotation:

> Guided experiences with the objects and materials of their natural environment help children to gain worth-while information, to develop habits of discriminating observation, to get an understanding of the interrelationships of things in the environment, and to develop desirable attitudes toward the phenomena with which they will be in contact throughout their lives.[3]

Teachers Guide to Education in Later Childhood includes a description of the science program for grades four, five, and six. Science study is described as occupying a major role in the education of children in these grades. The following quotations indicate the importance attached to the science curriculum:

> The suggested curriculum units that are presented in subsequent chapters of this book point specifically to science content and method, but in whatever experiences the school provides, teachers should help children to understand the significance of science, its method and spirit, the problems which rapid scientific development has caused, and the possibilities for human welfare in the rational extension of scientific knowledge and the scientific method into all phases of life.[4]
>
> Every topic in any curriculum unit involves science. Modern transportation involves thousands of separate scientific discoveries; as do the use of sound in communication, the provision of food, clothing, and shelter, and the generation and distribution of light and power. The conservation of health, life, and natural resources is a significant human purpose that is being furthered through science.[5]

[2] Education Code Section 10056.

[3] *Teachers Guide to Education in Early Childhood.* Compiled by the Bureau of Elementary Education, State Department of Education, Under the Direction of the State Curriculum Commission. Sacramento: California State Department of Education, 1956, p. 574.

[4] *Teachers Guide to Education in Later Childhood.* Compiled by the Bureau of Elementary Education, State Department of Education. Under the Direction of the State Curriculum Commission, Sacramento: California State Department of Education, 1957, p. 168.

[5] *Ibid.*, pp. 167-70.

The Mathematics Program

The mathematics program of the elementary schools of California is also given support and direction by distribution of state texts and teachers manuals for grades one through eight. The curriculum in arithmetic provides for discovery and development of meanings and skills; for meaningful practice and use of understandings and skills; for meeting individual needs; and for relating meanings and skills learned in arithmetic to other areas of the curriculum and to daily living.

Arithmetic study in the elementary school includes the following content:

The Number System	*Measurement*	*Mathematical Relationships*
Number systems	Linear	Percentage
Hindu-Arabic	Liquid and Dry	Tables
Roman	Weight	Graphs
Concept of number	Time	Statistics
Ordinals	Money	Scale Drawing and Maps
Cardinals	Temperature	Ratio and Proportion
Positioned value	Area	Literals and Formulae
Whole number computation	Volume	Geometric and Position
Addition		
Subtraction		
Multiplication		
Division		
Fractions		
Decimal		
Common		

Teachers Guide to Education in Early Childhood and *Teachers Guide to Education in Later Childhood* contain chapters which describe in detail the methods and procedures for planning instruction. Suggestions for organization of instruction to provide opportunity for slow and rapid learners to progress are found in large number in state texts and teachers guides.

A designated responsibility of county boards of education and governing boards of school districts is to prescribe the course of study for each grade of the elementary schools under their jurisdiction.[6] The courses of study designate arithmetic content for the various grade levels, describe methods of instruction, and list manipulative materials appropriate to the development of understanding of arithmetical concepts.

School districts are aided by state textbooks, by the teacher-training institutions of the state, and by the personnel and the programs of school districts, offices of county superintendents of schools, and the State Department of Education to attain a degree of uniformity in the development of elementary school programs of instruction in science and mathematics. The programs are consistent with the needs and abilities of children and the demands of society.

[6] Education Code Section 10321.

Mathematics and Science in Grades Nine Through Twelve

In 1951, at the time of the Korean War, 390,907 students were enrolled in grades nine through twelve in California's public schools. By 1956, this enrollment had increased to 572,821, a 46.5 per cent gain during the five-year period. The increase in enrollments in selected mathematics and science courses during the five-year interval is shown in Table 1.

In examining Table 1, the reader should bear in mind that the enrollment data do not include all the students who may have taken one or more of the courses. The enrollments include only those students enrolled in a course at a particular time. For example, a student who took laboratory physics in his junior year in 1955 would not be included in the number reported taking the course in 1956.

Table 1

INCREASE IN ENROLLMENTS IN SELECTED MATHEMATICS AND SCIENCE COURSES IN CALIFORNIA PUBLIC SCHOOLS, DURING FIVE-YEAR INTERVAL, 1951-56 (GRADES 9-12)

Courses	1951 enrollments	1956 enrollments
Beginning Algebra	58,207	107,665
Advanced Algebra	11,932	25,653
Plane Geometry	35,764	62,464
Trigonometry-Solid Geometry	7,204	10,903
Laboratory Chemistry	23,302	38,441
Laboratory Physics	10,412	15,621
Physiology	9,532	14,540

The per cents of increase in enrollments in each of the courses shown in Table 1 as compared to the increase in total enrollment, grades nine through twelve, during the five-year interval (1951-1956) is shown in Figure 1.

The per cents of increase in enrollments in certain mathematics and science courses, grades nine through twelve, in the nation's public secondary schools during the eight-year interval, 1948-1949 to 1956-1957, are shown in Table 2. Although the per cents of increase in enrollments shown in Figure 1 and Table 2 do not cover the same span of years, some comparisons can be made between the rate of enrollment increases in California in certain mathematics and science courses, and the rate for the nation. The per cents of increase in enrollments in algebra, plane geometry, chemistry, and physics courses

were higher in California public schools than the national per cents of increase were for the same period.

Table 2

INCREASES IN ENROLLMENTS IN MATHEMATICS AND SCIENCE COURSES IN U. S. PUBLIC SECONDARY SCHOOLS, 1948-49 AND 1956-57 (GRADES 9-12)

Courses	Enrollments		Per cent of increase
	1948-49	1956-57	
Beginning Algebra	1,042,000	1,518,000	45.7
Advanced Algebra	372,000	484,000	30.1
Plane Geometry	599,000	788,000	31.6
Solid Geometry	94,000	160,000	70.2
Trigonometry	109,000	200,000	83.5
Laboratory Chemistry	412,000	520,000	26.2
Laboratory Physics	291,000	310,000	6.5

Enrollments in Mathematics Courses, October 1956

The mathematics and science courses shown in Figure 1 are those generally required in a college preparatory program. However, other types of mathematics and science courses are offered in grades nine through twelve as well as the courses shown.

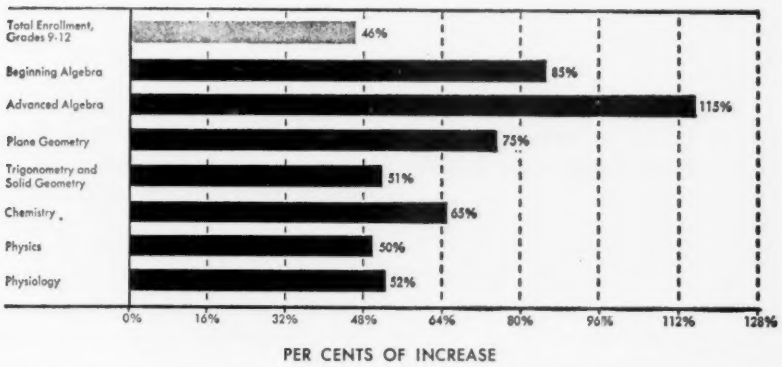

FIGURE 1. Per cents of increase in enrollments in selected subjects in California public high schools, October, 1951, to October, 1956.

Mathematics course subjects, the number of schools offering them, and the number of students enrolled in these courses in the fall term of the 1956-57 school year are shown in Table 3.

Table 3

ENROLLMENTS IN MATHEMATICS COURSES IN CALIFORNIA PUBLIC SCHOOLS, OCTOBER, 1956 (GRADES 9-12)

Courses	Number of schools	Total enrollments
Algebra, First Year	717	107,665
Algebra, Second Year	454	25,653
Arithmetic, 9th Grade	187	20,324
Business Mathematics	99	7,307
College Preparatory Mathematics	30	2,022
Consumer Mathematics	58	4,878
General Mathematics, First Year	501	64,678
General Mathematics, Second Year	84	5,680
Industrial Mathematics, First Year	64	2,755
Industrial Mathematics, Second Year	6	295
Plane Geometry	495	62,464
Review Mathematics	178	10,743
Solid Geometry	314	3,259
Trigonometry	402	7,644
Other	66	1,606
		326,973

Enrollments in Science Courses, October 1956

Table 4 shows the science courses offered in California public schools, grades nine through twelve, during the 1956-1957 school year, the number of schools offering the courses, and the number of students enrolled in them.

As of October 31, 1957, 643,532 students were enrolled in grades nine through twelve in California public schools. This is an increase of 61,711 (10.8 per cent) over the October enrollments of the previous school year. Table 5 shows the number of students currently enrolled in the mathematics and science courses which are generally considered as requirements in college preparatory programs, and the per cents of increase in enrollment over the 1956-1957 school year for each of the courses.

Since 1951, in California's public schools, grades nine through twelve, the enrollment has increased in those mathematics and science courses generally considered as required in college preparatory programs. The rate of increase in enrollment in these courses, 1951-1958, is greater than the rate of increase in total enrollment.

Table 4

ENROLLMENTS IN SCIENCE COURSES IN CALIFORNIA PUBLIC SCHOOLS, OCTOBER, 1956 (GRADES 9-12)

Courses	Number of schools	Total enrollments
Aeronautics, First Year	20	715
Applied Chemistry	22	1,149
Applied Physics	34	1,507
Applied Physiology	2	18
Biology, First Year	417	56,542
Biology, Second Year	73	3,944
Botany	18	915
Chemistry, First Year	456	38,337
Chemistry, Second Year	8	104
Earth Science	20	1,054
Household Science, First Year	12	774
Life Science, First Year	141	35,239
Life Science, Second Year	9	1,268
Photography, First Year	110	3,303
Photography, Second Year	30	389
Physical Science	106	7,195
Physics, First Year	428	15,410
Physics, Second Year	6	211
Physiology	132	14,540
Radio, First Year	18	547
Radio, Second Year	3	53
Science, 9th Grade	463	70,498
Science, 10th Grade	72	11,405
Zoology	14	597
Other	71	5,057
		270,771

Table 5

1958 CALIFORNIA ENROLLMENTS IN SELECTED MATHEMATICS AND SCIENCE COURSES IN CALIFORNIA PUBLIC SCHOOLS, OCTOBER, 1957

Courses	1957-1958 enrollments	Per cent of increase over previous year
Beginning Algebra	115,906	7.7
Advanced Algebra	30,357	18.3
Plane Geometry	73,655	17.9
Trigonometry-Solid Geometry	14,266	30.8
Laboratory Chemistry	43,877	14.1
Laboratory Physics	16,727	7.1
Physiology	17,157	18.0

Science and Mathematics Programs in California Public Junior Colleges

California public junior colleges maintain strong programs of science and mathematics and endeavor to keep these programs geared to meet current needs. The emphasis given to science and mathematics courses is made apparent by the following descriptions of programs that are offered in various California public junior colleges.

College of the Sequoias[7]

College of the Sequoias enrolled 1,184 full-time students[8] in the fall of 1957. It also has an enrollment of 1,210 adults.

The types of science, mathematics, and engineering courses offered are college and university parallel courses, remedial courses, and related courses. Each course involves class instruction, laboratory practice, and field trips, follows a required sequence, and has certain prerequisites.

The College of the Sequoias at present offers the following college preparatory or remedial courses: Engineering 52 (mechanical drawing), Mathematics A (elementary algebra), Mathematics B (plane geometry), Mathematics C (trigonometry), Mathematics D (intermediate algebra), Mathematics 50 (arithmetic), Chemistry 53 (elementary chemistry), Physics 10 (elementary physics), and Physics 45 (elementary nuclear physics).

Promising science, mathematics, and engineering students with unusual abilities are directed into these fields through a broad guidance program which includes academic and vocational advising. Two part-time counselors are assigned to advise science, mathematics, and engineering majors; and classroom teachers are alerted to pass on information to the counseling staff about good prospects. Personnel services provide accessible, current, vocational information, and mathematics, chemistry, aptitude, and interest testing. Personnel policies include a periodic review of the grades and personal folders of students currently enrolled as well as surveys on students who have transferred to senior colleges and universities.

Sacramento Junior College[9]

Sacramento Junior College enrolled 2,375 full-time students in the fall of the 1957-58 college year and over 5,000 part-time and adult students—a total enrollment of 7,408. Approximately 20 per cent of the subject enrollments are in life science, natural science, engineering, and mathematics. The per cent of enrollment in these fields is a product of progressive increases during recent years.

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[7] Prepared by Ivan C. Crookshanks, President, College of the Sequoias, Visalia.
[8] A full-time student is one who is enrolled in 12 or more units of academic work.
[9] Prepared by Peter W. Knoles, Vice President, Sacramento Junior College.

Sacramento Junior College has for many years carried on a program of guidance designed to help the student to discover his capabilities and direct his academic endeavors in fields of science, mathematics, and engineering, where success seems to be indicated. Counselors at the college are in close contact with the departments in the school and are at all times available to students seeking help.

As is true in all junior colleges, many students present themselves with inadequate training for successful progress in science, engineering, and mathematics. In order that those students who show some ability and zeal may be properly trained in basic courses, the college provides high school level courses in a variety of fields. These courses include high school algebra, plane geometry, high school chemistry, and high school mechanical drawing.

City College of San Francisco [10]

Full-time enrollment at the City College of San Francisco in the fall semester of the 1957-58 college year was 4,161. The total enrollment was 6,418.

Majors in the physical and life science curriculums for the 1957 fall semester are shown in the tabulation that follows:

Architecture	86	Geology	22
Biological science	113	Pre-medical	92
Chemistry	54	Nursing	277
Dental assisting	70	Optometry	6
Pre-dental	74	Pharmacy	56
Engineering	753	Pre-veterinary medicine	15
Engineering technology	488		
Forestry	33		* 2,148

* 37.5 per cent of all students.

Enrollments for courses offered by the Physical and Life Science Departments, for the 1957 fall semester are shown in the following tabulation:

Anatomy	164	Geology	120
Anthropology	100	Physical and life science	297
Architecture	126	Mathematics	1,635
Astronomy	173	Business mathematics and arithmetic	1,423
Bacteriology	135	Physical science	19
Biological science	70	Physics	700
Botany	69	Physiology	95
Chemistry	820	Zoology	261
Engineering	1,512		
Engineering technology	941		

The Engineer's Council for Professional Development at its twenty-fifth annual meeting accredited the following programs of the technical institute type which are offered by the Engineering Department of the City College of San Francisco.

[10] Prepared by Harold Spears, Superintendent of Schools, San Francisco Unified School District, and Louis G. Conlan, President, City College of San Francisco.

Air conditioning, refrigeration technology
Building and contracting technology
Electronics technology
Architectural drafting
Engineering drafting
Surveying and map drafting
Mechanical technology
Electrical technology

The programs of instruction are similar in nature to those in professional engineering programs, but are briefer and more technical in content. The major purpose of the programs is to prepare individuals for various technical positions in specialized areas of activity encompassed within the broad field of engineering.

Los Angeles Junior College District [11]

The Los Angeles Junior College District maintains seven junior colleges, of which two are specialized institutions. Data concerning enrollment trends in engineering, mathematics, and sciences for the five comprehensive institutions are as follows: Los Angeles City College, 9,066; East Los Angeles Junior College, 2,617; Los Angeles Harbor Junior College, 1,020; Los Angeles Pierce Junior College, 1,585; and Los Angeles Valley Junior College, 2,810.

As shown in Table 6, the enrollments in the transfer pre-engineering curriculums in the five colleges total 2,221. The number of students

Table 6

FALL, 1957 STUDENT ENROLLMENTS IN TRANSFER PRE-ENGINEERING CURRICULUMS AND THE PER CENT THIS IS OF TOTAL ENROLLMENT IN EACH OF FIVE LOS ANGELES JUNIOR COLLEGES

College	Number of pre-engineering students	Per cent of total enrollment
City	763	8
East Los Angeles	488	19
Harbor	170	17
Pierce	253	16
Valley	547	19.4
Total	2,221	

enrolled in these curriculums ranges from 8 per cent to 19.4 per cent of the total enrollment in each college. The present enrollment in pre-engineering curriculums in all five colleges is 9 per cent of the total enrollment—an increase of 5 per cent over such enrollment the previous year.

[11] Prepared by William N. Kepley, Jr., Junior College Curriculum Co-ordinator, Division of Instruction, Instructional Services, Los Angeles City School Districts.

Enrollment in terminal type engineering curriculums, shown in Table 7, does not indicate as many students as in the transfer type. The per cent of terminal type engineering curriculums enrollments ranges from 1.6 per cent to 13 per cent of the total enrollment, in the five colleges. Very often students choose the transfer type program in preference to the terminal type, and change their objectives later.

Table 7

FALL, 1957 STUDENT ENROLLMENTS IN TERMINAL TYPE ENGINEERING CURRICULUMS AND THE PER CENT THIS IS OF TOTAL ENROLLMENT IN EACH OF FIVE LOS ANGELES JUNIOR COLLEGES

College	Number of terminal engineering students	Per cent of total enrollment
City	177	2
East Los Angeles	132	5
Harbor	133	13
Pierce	91	6
Valley	46	1.6
Total	579	

Some of the increases reported in enrollments in science and mathematics courses are of interest. At Los Angeles City College the increases, as shown in Table 8, were made in the past three years.

Table 8

ENROLLMENT INCREASES IN SCIENCE AND MATHEMATICS COURSES NOTED AT LOS ANGELES CITY COLLEGE IN THE PAST THREE YEARS AND PER CENT OF INCREASE NOTED

Courses	Enrollments		Per cent of increase
	1954-55	1956-57	
Chemistry	865	924	8
Earth science	919	1,414	54
Electronics	215	314	46
Engineering and architecture	1,450	2,453	69
Mathematics	1,952	3,099	58.6
Physics	634	1,195	88.6

The total enrollment in the fields of science and mathematics increased from 6,026 to 9,399 (an over-all increase of 56 per cent).

At Harbor Junior College, in the last three years, the enrollment in mathematics courses has increased from 408 to 1,353. In physics courses the enrollment has increased from 94 to 417; in chemistry courses from 156 to 605. During the 1957, fall semester, 22 per cent of the enrollments were in engineering, mathematics, and science.

The guidance programs of the Los Angeles junior colleges provide for the early detection of the gifted. Testing, personal interviews, group orientation, and staff conferences are used for this purpose. The counselors do not believe they should direct students into particular fields. Students are, however, encouraged to pursue objectives compatible with their abilities, aptitudes, and interests.

The co-operation that industry has given the junior college is worthy of note. Demonstration-lecture teams have visited classes; scientists have been made available at specified times by industry to help fill the shortage of teachers; and industry has furnished many teaching aids.

Summary

1. Because California public junior colleges conduct the largest post high school education program in the state and thereby have the opportunity to influence the education of the largest single segment of youth and adults, they can be expected to contribute substantially to the education of personnel in the fields of mathematics and science.

2. The excellent record made by junior college graduates who have transferred to the state colleges and to the campuses of the University of California gives evidence of the quality of junior college educational programs.

3. The increasing emphasis by junior colleges on the preparation of technicians who can serve as assistants to scientists and engineers, will make available the help needed by highly trained specialists to increase their effectiveness.

4. The flexibility of the offerings of the junior colleges, and skilled counseling services, make possible the orientation into science and mathematics fields of high school graduates who previously had other vocational objectives.

5. The extensive programs of courses for adults, offered by the junior colleges in addition to traditional courses, provide a means for upgrading workers who need special courses in mathematics and science.

6. The junior colleges are "community colleges" and can quickly respond to the curriculum needs which develop in the areas served. The use of advisory committees consisting of local men and women who have knowledge of local educational needs, helps the junior colleges to be responsive to their communities' occupational demands.

Science and Mathematics in California State Colleges

Historically, the California state colleges have developed as teacher-education institutions. A legislative act of 1935 provided a legal foundation for the colleges to broaden their curricular offerings to include education in the liberal arts and in certain vocational fields which rely upon liberal arts instruction. Subsequent legislation in 1947 specified these functions as follows:

> The primary function of the state colleges is the training of teachers. State colleges also may offer courses appropriate for a general or liberal education and for responsible citizenship; offer vocational training in such fields as business, industry, public services, homemaking, and social service; and offer the preprofessional courses needed by students who plan to transfer to universities for advanced professional study.[12]

Further legislation in 1949 authorized the State Board of Education to permit colleges to confer masters' degrees in fields to be designated by the board. Programs for such purposes have been approved in certain occupational fields as well as in teacher education.

Science Instruction

Prior to World War II, state college curriculums stressed the basic science courses as fundamental to programs in teacher education and liberal arts. Since that time, occupational programs in engineering, agriculture, and other applied sciences have expanded greatly within the curriculum. Students in these fields have increased the enrollments in some science courses. On the other hand, the increased offerings of applied science programs have perhaps in some measure caused the proportion of enrollments in the basic sciences to decrease.

General Education

As a part of the 45-unit general education program, at least nine units of natural science must be completed by all degree-seeking students. This requirement is fulfilled by taking at least one physical science course such as astronomy, chemistry, geology, or physics, and one biological science course such as botany, physiology, or zoology.[13] Students not only achieve some breadth of scientific knowledge by completing this requirement, but many of them cultivate interests which cause them to take more science courses or to pursue science careers.

Growth in Enrollment

The graphs in Figure 2 show the growth of state college instruction in four areas: (1) agriculture, (2) engineering, (3) biological and physical sciences, and (4) mathematics. Each graph shows the amount of instruction in terms of its equivalency in full-time (15 units per semester) training of students. Secondly, each graph portrays the per

[12] Education Code Section 20301.
[13] As designated in California Administrative Code, Title 5, Sections 919, 920, and 921.

cent of total collegiate instruction devoted to the particular subject, thus providing an index of its growth in relation to that of total collegiate instruction.

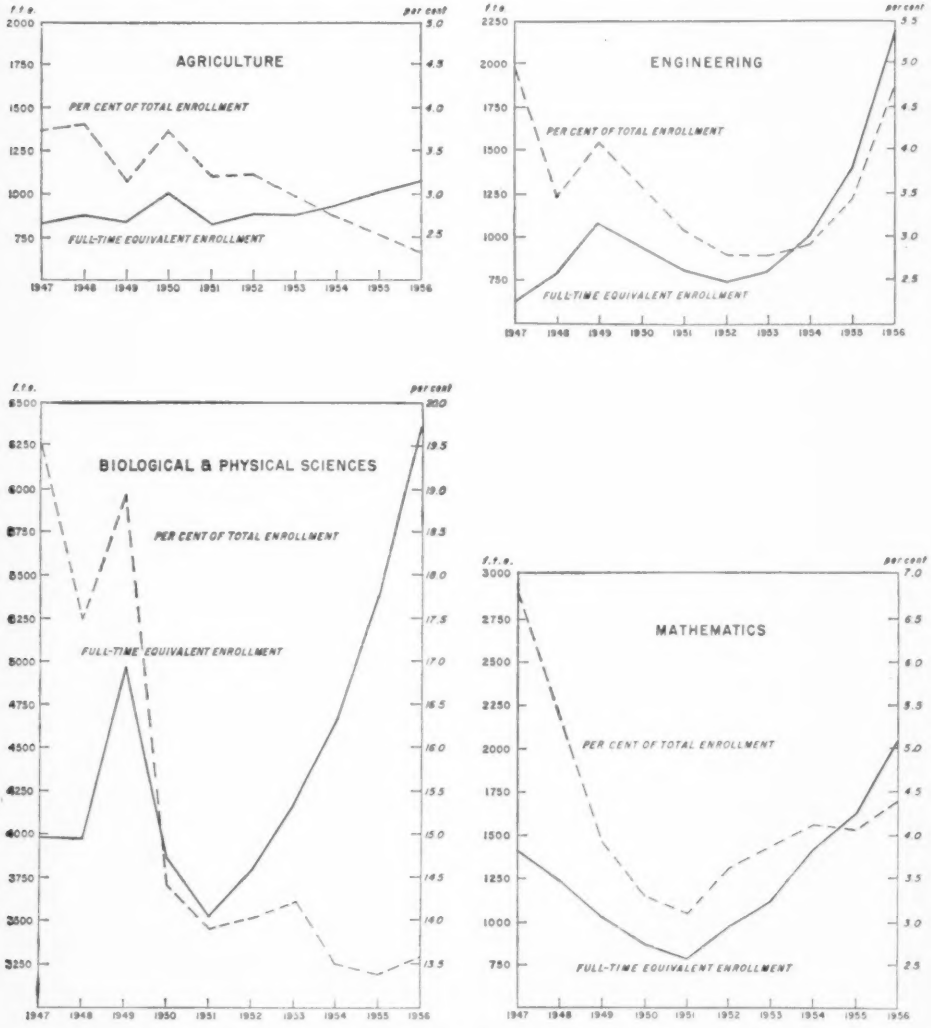

FIGURE 2. Full-time equivalent student enrollments in selected courses offered by California state colleges, with per cents of total instructional enrollments indicated.

These graphs show that, except for a slight decrease in 1951, the growth of enrollments in mathematics and natural science instruction has steadily increased. The postwar recession of enrollments in science and mathematics resulted from a slight decrease in the total full-time equivalent enrollments in 1951, and perhaps, from certain influences which lessened the attractiveness of careers in science and engineering.

Comparison of enrollment growth in these particular subjects with that of total instruction, as indicated by the per cent lines, reveals that enrollments in mathematics and engineering are steadily increasing, whereas those of science and agriculture are decreasing in relation to total instructional enrollments. The increased interest in engineering and mathematics instruction during the last few years has been created in part by recent heavy demands for scientists and engineers to design, operate, and maintain the vast industrial facilities within the state.

Majors by Subject Field

Another indication of the relative status of science and mathematics in the state college curriculums results from a recent survey of regular students majoring in various baccalaureate degree programs. Figure 3 shows that nearly 13 per cent of the enrollees are engineering majors, thus demonstrating the relative popularity of engineering careers. Majors in mathematics account for 1.4 per cent of the group, and those in the physical and biological sciences account for 6.2 per cent, making a combined total of 7.6 per cent. About 4.5 per cent of the students major in agriculture.

Degrees Granted

A study of degrees awarded by the California state colleges shows that about 30 per cent of all the degrees granted are awarded to persons receiving teaching credentials, and most of these are awarded to students in elementary education.[14] The remaining 70 per cent, which includes degrees granted to both students preparing for high school teaching careers and those preparing for careers in other occupational fields, was reviewed carefully to chart the increase in the number of degrees awarded in the natural sciences, engineering, agriculture, and mathematics. Figure 4 shows the degrees granted in these fields, and illustrates a degree-granting pattern which is characterized by rapid acceleration to 1950, a slight recession thence to 1952 or 1953, and then a rapid acceleration to the present time. The inset graph, showing total degrees awarded, excluding those granted to students obtaining teaching credentials, presents a similar pattern. The two most marked deviations from this pattern are in the fields of mathematics, showing comparatively small growth, and engineering, showing a pronounced increase in the

[14] Candidates for general secondary credentials must earn 30 semester units of postgraduate work.

number of students to whom degrees have been granted during the past two years. Again, the graphs showing the differences between enrollment in these two subjects indicate the recent tendency of youth to seek careers in applied fields of endeavor rather than in the basic sciences. As indicated in Figure 4, nearly as many graduates obtained degrees in engineering as in all of the physical and biological sciences combined, in 1957.

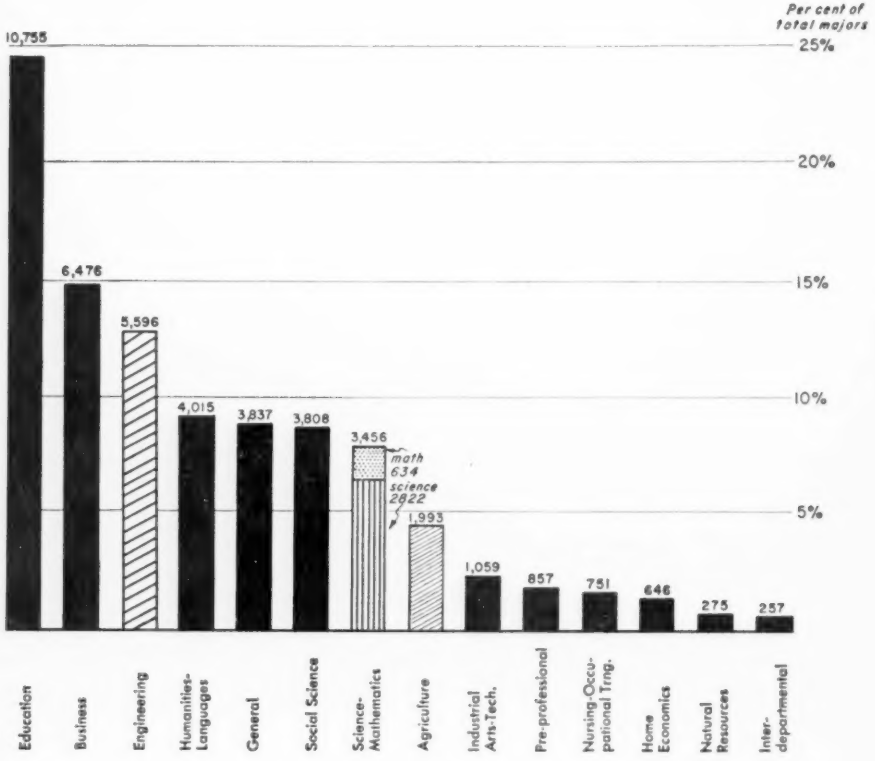

FIGURE 3. Number of student majors in baccalaureate degree programs, California state colleges, 1957-58.

The State Colleges Prepare Scientific Personnel

State college curriculums reflect the demands of California's economy. Evidence of this may be seen in the foregoing data which indicate the rapid rise and fluctuations in the production of engineers.

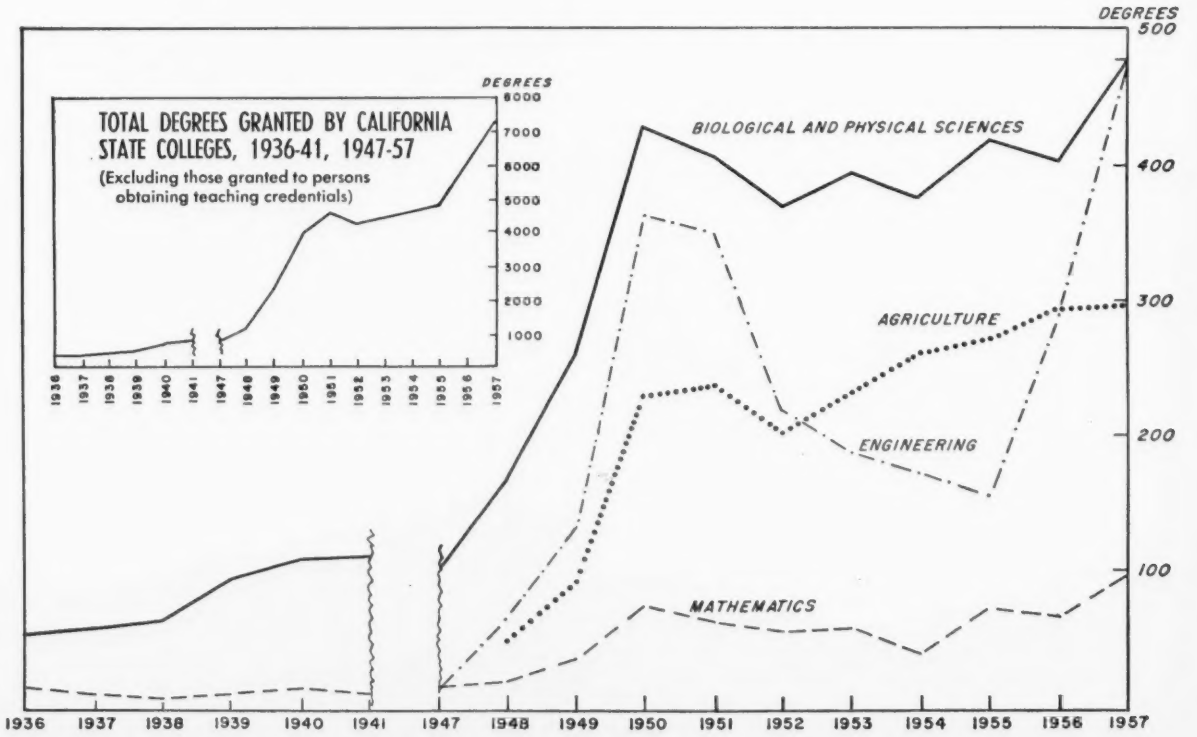

FIGURE 4. Number of degrees (excluding those granted to persons obtaining teaching credentials) granted by California state colleges in selected science subjects, 1947-57.

An illustration of state college response to the needs of industry may be seen in the development of a graduate program in applied mathematics at San Jose State College. A few years ago many requests were received by that college for graduate mathematicians with training in the programming and operation of electronic computers. These requests came from such organizations as the Ames Laboratory of the National Advisory Committee for Aeronautics, Shell Development, Atomic Energy Commission, International Business Machines, Hughes Aircraft, San Francisco Naval Shipyard, U. S. Civil Service, Western Electric, Pacific Telephone and Telegraph, Lockheed Aircraft, and California Research. Spurred on by these requests, the college staff carefully studied the employment trend of previous mathematics graduates, assessed the types of competencies and skills required by the job market, constructed a sequence of courses to train mathematicians in the competencies needed, arranged a work-study program involving use of electronic computers at a nearby installation, and with the approval of the State Board of Education eventually launched a full-scale graduate program leading to the master's degree in occupational mathematics. Since its founding, the program has kept in step with the ever-increasing demands for highly skilled mathematicians who have had experience in electronic computing.

Other programs can be cited briefly. For example, San Diego State College recently commenced a master's degree program in applied physics which includes, as one of its options, a course for the training of nuclear physicists to be employed at atomic installations. A program in the applied life sciences at Sacramento State College prepares students for employment at the technician level in federal, state, and private agencies in the fields of plant, animal, or human biology. Fresno State College has developed a unique program of courses in viticulture and enology to train students for careers in grape and wine production. Similarly, other colleges have sought continuously to train students for professional services which meet the needs of local communities and the state.

Workshops for teachers of science and mathematics are being given increased emphasis. An example of this trend may be noted at San Jose State College where, in 1957, a workshop for high school science teachers was sponsored by the National Science Foundation. Other state colleges which have obtained similar grants will offer workshops during the 1958 summer session instructional programs for science and mathematics teachers.

Summary

All degree-seeking students in California state colleges are required to take courses in the physical and biological sciences, assuring some general education experiences in those fields. A study of enrollments

indicates that although the volume of science instruction has increased considerably during the last 20 years, it has not increased as rapidly as total enrollments. Enrollments in engineering and mathematics, on the other hand, have increased more rapidly during the past four or five years than have the total enrollments. These different rates of growth may be explained partly by the recent tendency of college students to seek training in the applied rather than in the basic sciences as preparation for immediate and specific careers within industry or government. This trend is further evidenced by the rapid increase in the number of engineering degrees granted as compared with the science and mathematics degrees granted during the past two years.

The state colleges have responded to the needs of the economy in producing science personnel. This response is illustrated by the developments of a graduate program in occupational mathematics at San Jose State College, and by the offering of many diverse occupational programs in the other colleges. Finally, the placement of recent California State Polytechnic College graduates in engineering positions throughout the state demonstrates one of the contributions made by state colleges to the advancement of California's industrial technology.

FRESNO STATE COLLEGE TO DEDICATE NEW CAMPUS

ARNOLD E. JOYAL, *President, Fresno State College*

The new 900-acre Fresno State College campus on which 17 major buildings have been completed will be formally dedicated at 10 a.m. on Friday, May 9, 1958. An academic convocation, attended by university and college representatives and state and local governmental officials, will culminate the week of celebration. Plans for the event have been under development for more than a year. They have been under the direction of two committees, one representing the College, headed by Dean Irwin O. Addicott, and one representing the citizens of the San Joaquin Valley, chaired by Federal Judge Gilbert H. Jertberg, former member of the State Board of Education. Plans are being made to accommodate an audience of 10,000 or more at the convocation which will include the faculty, student body, and visitors from all over the state.

Master Plan Building Program

The new Shaw Avenue campus, now in the last stages of completion, represents a state investment of approximately 25 million dollars. It embraces not only an academic campus, which includes 17 major buildings and numerous related facilities, but also more than a dozen agricultural buildings, and other minor structures used in connection with the institution's farm school program. An additional auxiliary farm of 360 acres is located about two miles from the Shaw Avenue campus. Ultimately, in accordance with the master plan now being completed, there will be more than 25 buildings and many smaller facilities. The college plant is presently being planned to accommodate 10,000 students in 1970.

Originally conceived about 1946, when the need for expansion became apparent, definite plans for the new campus were initiated in 1948, when land was purchased at the corner of Shields and Blackstone Avenues for the development of an academic campus. This site, the so-called Markarian Estate, embraced only 160 acres. Before construction was commenced, however, a decision was reached to move the location outside the city to a larger and more appropriate site at Shaw and Cedar Avenues, and to consolidate the academic and farm school campuses. Another block of land was purchased in 1949, and in December of that year the announcement was made that the campus would be located there on a site which originally embraced 880 acres. Subsequently the Markarian property was sold. Actual construction of the first building

was started in October, 1950. Now, eight years later, about 70 per cent of the instruction of approximately 6,000 students is given on the new campus. The remainder, including about 50 members of the faculty, is still housed at the University Avenue campus, a large part of which is now the property of the Fresno Unified School District and the site of Fresno Junior College. Although most of the land and buildings at the old campus have been sold to the Fresno Unified School District, the College exercises its right, through a leasing arrangement, to use the facilities as long as necessary for college purposes. Ultimately, the entire area, including Ratcliffe Stadium and the student housing operated by the College, will be transferred to the Fresno Unified School District, and all college activities will be moved to the Shaw Avenue campus. It is hoped that this transfer can be completed by 1960.

History of the College

Fresno State College was established in 1911 as a two-year normal school and opened with an enrollment of 170. C. L. McLane, who was then the superintendent of the Fresno city school system had been instrumental in getting the normal school established and became its first president. He retired in 1927, and died in 1949. President McLane was succeeded by Frank W. Thomas who had served the College as vice president since 1917. Dr. Thomas retired in 1948 and was succeeded by Arnold E. Joyal. Thus the institution has had only three presidents in its 46-year history. In 1921, the school's name was changed from normal school to teachers college. In 1935, the word "teachers" was dropped from the title, and the institution became Fresno State College.

Like all the California state colleges, the institution has shown a phenomenal growth, particularly in recent years. In the fall of 1940-41, immediately before World War II, the enrollment was 2,194, including 174 part-time students. Since that time, the enrollment has more than doubled. In the fall of 1957-58, the college enrolled 4,602 regular students and 1,121 limited (part-time) students. In addition, more than 1,100 extension students were enrolled in more than 30 off-campus classes scattered over the San Joaquin Valley.

The instructional program of the college has also had a rapid development. Prior to 1947, the state colleges were entirely undergraduate institutions. That year, however, they were authorized to offer graduate work leading to the General Secondary Credential. In 1949, they were authorized to grant the Master of Arts degree, which, since that time, has been authorized in more than a dozen fields of study at Fresno State College.

All evidence points to the fact that Fresno State College will continue to grow in terms of enrollment and educational programs. It is currently predicted that the enrollment of the College in 1960 will exceed 6,200;

in 1965 it will exceed 7,500; and in 1970 it will approximate 9,000 full-time equivalent students. The new campus at Fresno State College is being constructed to serve the needs of this expansion. The state has been wise in acquiring sufficient acreage to make possible extensive expansion of the master plan building program to accommodate the large numbers of prospective students. Presently constructed facilities are already inadequate, and plans are now being made to build additions to several of the classrooms and administration buildings currently being used.

Plans for the Dedication

The ceremonies of dedication of these new facilities will include a wide variety of activities during the week of May 5-9, 1958. There will be many concerts and musical events; a Shakespearean play will be presented each night in an outdoor amphitheatre, free of charge to all visitors; there will be numerous exhibitions sponsored by various divisions and departments of the College; there will be lectures, and visits by teachers and students from San Joaquin Valley high schools; and many luncheons, dinners, and social events for visiting dignitaries will be given. During Dedication Week the State Board of Education will hold its regular bimonthly meetings on the Fresno State College campus. The Governor and other top-level state officials will be in attendance at several of the ceremonial occasions and the Governor will participate in the formal convocation on Friday morning in the specially constructed outdoor theatre adjacent to the science building.

Arthur Margosian, a member of the instructional staff at the College is Executive Secretary in charge of arrangements for Dedication Week. Invitations have been extended to representatives of all of the colleges and universities in the West, and to state, county, city, and public school officials. Everyone is invited, whether or not he is the recipient of a special invitation, particularly high school students in the schools of the San Joaquin Valley. Newspaper publicity and other forms of advertising will announce to the public the various affairs which will take place during Dedication Week.

Officials at the College have properly noted that the state has invested a large sum of money in this new campus as a center of learning designed to serve the needs of the people of the San Joaquin Valley. Expansion of the building program and of the educational offerings is continuing at a rapid pace. Several structures are now being completed and three dormitories for 600 students are being started. It is hoped that a large number of citizens and representatives of various organizations throughout the state will be on hand, not only to participate in the formal Dedication Week ceremonies, but also to see for themselves the nature and extent of the facilities now available at the new campus of Fresno State College.

SOCIAL STUDIES WORKSHOPS, SUMMER, 1958

People interested in social studies, particularly in the current revision of the social studies program in California, will find opportunity for further study during the summer of 1958. Altogether 21 colleges and universities are co-operating with the California State Central Committee on Social Studies to offer workshops, courses, and seminars on 20 campuses during the coming summer. These cosponsored activities are for teachers, administrators, and supervisors interested in the social studies. They will deal with the social studies program at all grade and educational levels, kindergarten through junior college. The workshops, courses, and seminars are offered at different times during the summer for the convenience of representatives from local school systems. It is suggested that contact be made early with the colleges and universities since enrollment in the cosponsored activity will be limited on some of the campuses and will be by invitation on others. The following brief descriptions will help to acquaint teachers, administrators, and supervisors with the nature of the cosponsored activity. For additional information about any activity write to the Director of the Summer Session of the college or university cosponsoring the activity.

CALIFORNIA STATE POLYTECHNIC COLLEGE, San Luis Obispo

July 7 to July 18—Social Studies Workshop (SSc 621, Curriculum in Secondary Social Studies-Workshop or Ed. 621, Curriculum in Elementary Social Studies-Workshop, 3 quarter units). This workshop is part of a state-wide program sponsored by the California State Department of Education whereby teachers from the elementary school through the junior college level can assist in planning social studies curriculums at their own levels of interest. Workshop fee, $15 payable to Cashier, California State Polytechnic College, on or before July 7, 1958. Address inquiries to Social Studies Workshop.

CHICO STATE COLLEGE

June 16 to July 11—Workshop in Teaching the Social Studies (Ed. s271B, 4 units). Open to administrators, consultants, and teachers of the social studies. Laboratory approach under guidance of a team of instructors. Sectioning by grade levels to take care of interests from kindergarten through grade fourteen. Study of the work of the California State Central Committee on Social Studies. Illustrative courses of study, resource units, teaching practices, and instructional materials. Criteria to guide textbook selection are to be considered. Offered in cosponsorship with the State Central Committee on Social Studies. Tuition $38. Charles Millis and Katherine Dresden. Daily, 8:30-11:30.

CLAREMONT GRADUATE SCHOOL, Claremont

June 30 to July 18—Workshop on the Social Studies Curriculum. Planned in co-operation with the California State Central Committee on Social Studies, the workshop will refine the curricular design for the social studies, kindergarten through junior college, and will implement this new program with units, materials, and teaching sequences (3 units). Adrian N. Gentry and staff. Daily 9-12.

COLLEGE OF THE PACIFIC, Stockton

June 23 to July 11—Social Studies Curriculum Workshop (Ed. S260b, 3 units). This workshop focuses attention on the revised social studies program for California. Teachers at all levels—elementary school through junior college are invited to study the implementation of the revised program. A number of guest resource people will participate. Course fee $5. Edwin Ingles, Carl D. Lang, and Muriel Shields. Daily, 8-12.

FRESNO STATE COLLEGE

Fresno State College is again co-operating with the State Department of Education and the California State Central Committee on Social Studies in conducting workshops at Fresno State College and at Bakersfield. The workshops will be open to teachers, administrators, and supervisors with a background of experience in social studies at elementary or secondary school levels. Prior application for admission to enroll is requested.

June 16 to July 3—Fresno State College Campus; July 7 to July 23—Bakersfield—Workshop in Curriculum Development (Ed. 278, three weeks, 3 units). The workshop offers opportunity for individuals to contribute to the formulation of a social studies program for California public schools. Members of the staff are specialists in the field of social studies. The objectives of the workshop will include the preparation of instructional materials for the program formulated by the California State Central Committee on Social Studies. W. C. Beatty, assisted by Kenneth Meeks and James E. Solt. For further information, write to Dean of Summer Session, Fresno State College.

HUMBOLDT STATE COLLEGE, Arcata

June 16 to July 25—Workshop in Social Studies Curriculum and Workshop in Elementary School Curriculum (Graduate, Ed. 234, Undergraduate, Ed. 134). A workshop scheduled for the regular six-week summer session, so as to make it possible for workshop participants to enroll for a maximum of six units of credit in courses in the regular summer program. Emphasis will be placed on a critical analysis of the new proposed curriculum materials in social studies prepared by the California State Central Committee, involving both academic content and methodological problems. Open to all teachers, supervisors, and administrators, kindergarten through grade fourteen. May be taken for additional credit by those who participated in the 1957 workshop. Admission only by approval of application. Forms may be secured from Ivan C. Milhous, Dean of Extended Services. Tuition $19. Archie Jones. Daily, 2-4.

IMMACULATE HEART COLLEGE, 2021 North Western Avenue, Los Angeles

June 24 to July 31—Curriculum Laboratory in the Social Studies (Ed. 263a). Workshop approach to a consideration of content and procedure in the social studies; study of social studies framework of the California State Central Committee on Social Studies; construction and evaluation of resource units and similar materials. Course open to graduates of accredited institutions. Sister Mercia. Daily, 10:30-11:30.

LONG BEACH STATE COLLEGE

June 23 to August 1—Workshop in Social Studies Curriculum (Ed. 283B, 6 units). A consideration of the work of the California State Central Committee on Social Studies, to date. Discussions will center on the concepts of social science as outlined by the Central Committee and the relation of the concepts to the social studies curriculum in California public elementary and secondary schools. Open to experienced teachers, supervisors, and principals. For further information, write to John E. Searles, Division of Business and the Social Sciences.

MOUNT ST. MARY'S COLLEGE, Los Angeles

(*See* University of California, Los Angeles)

OCCIDENTAL COLLEGE, 1600 Campus Road, Los Angeles

June 23 to July 3—WORKSHOP IN SOCIAL STUDIES (S203a, 2 units). Given in cooperation with the California State Central Committee on Social Studies. An examination of the specific social sciences and their contribution to a social studies program. The scope and sequence of the social studies from kindergarten through junior college; methods and instructional materials appropriate for the various levels, developing district plans for the social studies. Armen Sarafian. Daily, 8-12. (Opportunities for group and individual research, and previewing of instructional materials on some afternoons.)

SACRAMENTO STATE COLLEGE

WORKSHOP IN SOCIAL STUDIES (Ed. 212, 4 units). The intent of the workshop will be to examine the progress reports of the California State Central Committee on Social Studies; to continue the work begun last summer and re-examined at the local May 3rd conference; and to consider problems of sequence, instructional procedures, and materials in relation to current curricular developments.

SAN DIEGO STATE COLLEGE

June 30 to August 8—SAN DIEGO AREA SOCIAL STUDIES WORKSHOP (3-6 units). Limited enrollment, by invitation. For details and eligibility, write Joe A. Apple, Workshop Director.

SAN FRANCISCO STATE COLLEGE, 1600 Holloway Avenue

June 30 to July 18—SOCIAL STUDIES CURRICULUM WORKSHOP (Ed. S292.2, 3 units). This invitational workshop will be concerned primarily with an examination of materials produced by the California State Central Committee on Social Studies; and with ideas emerging from one-day conferences held at various centers throughout the state, during 1958, to consider the Central Committee's proposals. Workshop emphasis will be on selected aspects of the proposals which are likely to require the most careful implementation in classrooms. County and district superintendents of schools are invited to suggest representatives for participation in the workshop. Interested teachers (kindergarten through junior college), curriculum workers, and administrators are invited to apply. It is requested that applications be submitted before May 15. Applications to participate in the workshop may be obtained by writing to Mrs. Edith P. Merritt.

SAN JOSE STATE COLLEGE

June 16 to July 3—WORKSHOP CONFERENCE ON THE SOCIAL STUDIES (3 units). The workshop will deal with instructional problems related to the proposed design of the social studies curriculum. It will be open only to members of curriculum groups sponsored by school districts and to the participants in the 1957 workshop who wish to continue their studies.

STANFORD UNIVERSITY, Stanford

June 23 to August 16—RECENT DEVELOPMENTS IN SECONDARY SCHOOL SOCIAL STUDIES and ELEMENTARY SCHOOL SOCIAL STUDIES (Ed. 396 and 397). In these two courses a series of joint meetings will be devoted to a study of the proposed new social studies curriculum. A report of the conclusions growing out of these meetings will be forwarded to the California State Central Committee on Social Studies.

UNIVERSITY OF CALIFORNIA, Berkeley

SOCIAL STUDIES WORKSHOP (Ed. 133S, 2 units). Intensive work upon social studies problems, proposals, units of work and sequence, elementary school through junior college. Study of recommendations of the California State Central Committee on Social Studies.

SOCIAL STUDIES IN THE ELEMENTARY SCHOOL (Ed. 138S, 2 units). Specific attention to the social studies in the elementary school; purposes, organization of the program, unit planning, and the like; attention to state-wide problems and issues. Opportunity to plan units in the social studies framework.

SOCIAL STUDIES IN THE SECONDARY SCHOOL (Ed. 178S, 2 units). Specific attention to secondary school problems; purposes, organization of the program, unit planning, and the like; attention to state-wide problems and issues. Opportunity to plan units in the framework.

SEMINAR IN THE SOCIAL STUDIES (Ed. 258, 2 units). Individual investigation and group criticism of issues and problems in the social studies; critical evaluation of proposals.

DIRECTED RESEARCH, SEMINAR (Ed. 298, 2 units). Individual study of critical problems in the social studies, elementary grades through junior college.

SEMINAR IN HISTORY AND CIVILIZATION OF THE FAR EAST (Hist. 291D, 2 units). Production of units of study, course outlines, and other materials for use in teaching on the Far East in secondary school social studies programs.

SEMINAR IN THE HISTORY OF THE UNITED STATES (Hist. 271D, 2 units). Identification and consideration of basic concepts in United States history and the development of these concepts in secondary school social studies programs.

NOTE: Students wishing to work full-time on proposals of the California State Central Committee on Social Studies should take courses Ed. 133, 258, or 298.

UNIVERSITY OF CALIFORNIA, Los Angeles 24, planned jointly with MOUNT ST. MARY'S COLLEGE

August 18 to 29—ORGANIZATION OF THE SOCIAL STUDIES CURRICULUM, kindergarten through grade fourteen; development of recommended units of work. Study of related methods and materials. Armen Sarafian and staff.

UNIVERSITY OF CALIFORNIA, Santa Barbara

June 23 to July 11—ADVANCED CURRICULUM DEVELOPMENT SEMINAR—SOCIAL STUDIES (Ed. 239A, 3 units). This seminar is the second in the series of social studies seminars offered in conjunction with the state-wide social studies project. The first seminar, conducted in the 1957 summer session, emphasized the basic concepts derived from the several social science disciplines. This, the second seminar, offered during the 1958 summer session, will emphasize the scope and sequence of content and method in the social studies, kindergarten through the junior college. The findings of the 17 social studies workshops held throughout the state last summer, and materials and recommendations of the California State Central Committee on Social Studies will be the basis for the seminar activities. Opportunities will be provided for groups and individuals to work on the social studies framework in relation to county and district school programs of instruction.

UNIVERSITY OF REDLANDS, Redlands

June 23 to July 4—WORKSHOP ON SOCIAL STUDIES (2 units). Special emphasis will be given to the process of structuring the social studies; unit developments as tentative guides for social studies at various grade levels; and critical analyses of recommendations outlined by the California State Central Committee on Social Studies. Stanley L. Combs, workshop director.

UNIVERSITY OF SOUTHERN CALIFORNIA, University Park, Los Angeles

June 23 to July 11—Social Studies Co-operative Workshop, with California State Department of Education to study proposals and recommendations for up-grading of social studies teaching as an area of public school curriculum. W. Norman Wampler.

WHITTIER COLLEGE, Whittier

August 4 to August 15—Workshop on Social Studies. (Ed. 231, 2 credits). The content of the social studies curriculum in grades one through fourteen will be considered, with the major emphasis on the elementary school. The workshop, using materials developed by the California State Central Committee on Social Studies and the State Department of Education, will be conducted in co-operation with these two agencies. Helen Doak.

WESTERN STATES CONFERENCE ON TEACHER PREPARATION IN SAFETY AND DRIVER EDUCATION—A WORKSHOP APPROACH TO THE DEVELOPMENT OF TEACHER EDUCATION PROGRAMS

JOHN R. EALES, *Consultant in Secondary Education*

The California State Department of Education, due to rapid growth of the driver education and training program,[1] and to increasing interest in the preparation of teachers who work in the area of safety and driver education, is co-operating with the University of California, Berkeley, and the Safety Center, New York University, in holding a work conference on teacher preparation in safety and driver education, in San Francisco on June 2, 3, and 4, at the University of California Extension Center. Representatives of teacher-education institutions and state departments of education in 11 western states will be invited to attend. At this meeting teacher needs and the courses which may be developed to meet these needs will be discussed. It is hoped that the conference will result in agreement as to the title and general content of basic courses in safety and driver education which colleges and universities may wish to offer.

In the last few years the need for a meeting to discuss the preparation of teachers for safety and driver education has become increasingly apparent. People interested in such preparation have been calling on school districts to improve and further develop their programs of safety and driver education. These people have also been emphasizing the need for adequately trained teachers. The following recommendations of the Education Division of the 1957 Governor's Traffic Safety Conference (an annual conference dealing with traffic safety in California), illustrate clearly the thinking of those who desire improvement in safety and driver education programs:

1. That the State Department of Education encourage each school district, regardless of size, to designate one person trained in safety education to be responsible on either a part-time or full-time basis for co-ordinating a program of safety education and for utilizing materials available
2. That the State Department of Education and the California Association of Secondary School Administrators Safety and Driver Education Committee make an effort to obtain a statement of teacher qualifications acceptable to the State Board of Education to replace

[1] See "The Growth and the Financing of Driver Education and Training in California," *California Schools*, XXIX (March, 1958) 154-56.

Section 175 of the California Administrative Code, Title 5, Education, which was deleted in November of 1953

3. That the State Department of Education encourage teacher-education institutions to expand the teacher training in driver education and driver training to four semester hours and to include practice teaching in the program
4. That the State Department of Education and the California Association of Secondary School Administrators Safety and Driver Education Committee encourage school districts to report to the State Department of Education all costs of driver training upon which reimbursement is based
5. That the State Department of Education and California Association of Secondary School Administrators Safety and Driver Education Committee encourage the districts to up-grade the quality of the program in driver education
6. That the State Department of Education encourage teacher-education institutions to increase the emphasis on traffic safety education for elementary teachers
7. That the State Department of Education encourage adult education schools to plan the program in the education of illiterates to include units which will develop the skills necessary for mastery of simple English used in obtaining a driver's license
8. That a state-wide committee representing various organizations and groups be established by the Governor's Traffic Safety Committee to further the establishment of a safety center for advanced training and research in a California institution of higher learning
9. That the superintendent of schools in each local community assume responsibility for calling together officials and nonofficial agencies to study the mutual problems of school child crossing protection

It will be noted that most of the recommendations pertain to the preparation of the safety and driver education personnel in our schools.

The June conference which is to be co-ordinated by Marland K. Strasser, Field Representative, Accident Prevention Department, Association of Casualty and Surety Companies, will have an excellent staff. Herbert Stack of New York University, recently retired as Director of the Safety Center of that institution will be the keynote speaker and will summarize the accomplishments of the conference.

Roy E. Simpson, Superintendent of Public Instruction, State Department of Education, and William Brownell, Dean, School of Education, University of California, Berkeley, will welcome the group. Burton Vasche, Associate Superintendent of Public Instruction; and Chief, Division of State Colleges and Teacher Education, State Department of Education; James Stone, Associate Professor of Education and Director

of Teacher Education, University of California, Berkeley; and Cecil Zaun, Supervisor of Safety, Los Angeles Public Schools, will address the Conference. The following will serve as group discussion leaders:

Franklin Haar
Director of Health Education
University of Oregon

Vaughn Hall
Director of Health, Physical Education and Recreation
State Department of Education
Utah

Carl Larson
Specialist in Teacher Education
California State Department of Education

Robert Rhodes
Dean of Instruction
Long Beach State College

Roy Rice
Professor of Education and
Director of Summer Session and Extension
Arizona State College, Tempe

Planning for the conference is being carried on by Dr. Strasser, and by Dr. Helen V. Hammarberg, Head of the Department of Conferences and Special Activities, University Extension, University of California, Berkeley, in co-operation with Dr. Larson and Dr. Eales of the State Department of Education. The planning committee has established the following work schedule for the conference:

9:00 a.m. to 10:00 a.m.—General Session (Speaker)
10:15 a.m. to 12:00 a.m.—Group Work
1:00 p.m. to 3:15 p.m.—Group Work
3:30 p.m. to 5:00 p.m.—General Session (Summary Discussion and Recommendations)

Departmental Communications

OFFICE OF THE SUPERINTENDENT OF PUBLIC INSTRUCTION

ROY E. SIMPSON, *Superintendent*

REGULATIONS ADOPTED BY SUPERINTENDENT OF PUBLIC INSTRUCTION

Notice of Employment. The Superintendent of Public Instruction, acting under the authority of Education Code Section 13004, added Section 70.2 to Title 5 of the California Administrative Code, relating to notice of employment, to read as follows (effective February 28, 1958):

70.2. Filing of Notice of Employment. The notice to the county superintendent of schools by governing boards of school districts of the employment of persons for positions requiring certification qualifications that is required by the provisions of Section 13004 of the Education Code shall be filed with the county superintendent of schools in the number of copies required by him. The notice shall identify the school district, shall be signed by the authorized official or officials of the school district, and shall contain at least the following data for each empoyee:

(a) Name.
(b) Position filled.
(c) Classification (substitute, temporary, probationary, permanent).
(d) Effective date and terminal date of employment.
(e) Rate of salary (per school month, calendar month, day, hour).
(f) Major accounting class, as shown in Part I of California School Accounting Manual, to which the salary will be charged.

The notice may contain such additional data as agreed upon by the governing board of the school district and the county superintendent of schools.

Schools or Classes at Tuberculosis or Polio Wards, Hospitals or Sanatoriums Maintained by a County or Group of Counties. The Superintendent of Public Instruction, acting under the authority of and implementing Section 9652 of the Education Code, added Article 14.3 (Sections 129.50 through 129.53) to Subchapter 1 of Chapter 1 of Title 5 of the California Administrative Code relating to schools or classes at tuberculosis or polio wards, hospitals or sanatoriums maintained by a county or group of counties to read as follows (effective March 6, 1958):

Article 14.3. Schools or Classes at Tuberculosis or Polio Wards, Hospitals or Sanitoriums Maintained by a County or Group of Counties

129.50. *Scope.* The provisions of this article apply to a school district maintaining a school or classes at a tuberculosis or polio ward, hospital or sanitorium maintained by a county or group of counties.

129.51. *Maintenance.* A school or classes at a tuberculosis or polio ward, hospital or sanitorium may be maintained by a school district for the level authorized by law, as a regular day elementary, high school, or junior college school or classes, an approved evening high school, an approved evening junior college, or approved classes for adults.

129.52. *Administration and Counseling.* (a) *Evening Schools and Classes for Adults.* The administration and counseling for evening schools and classes for adults shall be as set forth in Sections 122, 122.01, 122.02, and 122.1(a) of this title.

(b) *Regular Day Schools or Classes.* When the school is maintained as a regular day school or the classes are connected with a regular day school, the administration and counseling pattern shall be the same as that employed in other regular day schools of the district. However, if 75 per cent or more of the enrollment in any junior college class so maintained consists of adults as defined in Education Code Section 9700.1, the provisions of Section 122.02 of this title shall apply to such class in regard to the assignment of personnel therein described.

129.53. *Attendance Accounting.* (a) A day of attendance for apportionment purposes is:

(1) For a pupil taught by individual instruction, as provided in Education Code Section 6851.1.

(2) For all other pupils, 180 minutes.

(b) *Counting Attendance.* Attendance shall be counted as specified in the indicated Education Code section or subsection of Section 9 of this title as follows:

(1) Evening schools and classes for adults—Section 9(f) of this title.

(2) Regular day schools or classes—Section 9(b), 9(c), or 9(d) of this title, as applicable to the grade level.

(3) Individual instruction—Education Code Section 6851.1, except that Section 9(j) of this title shall apply to pupils enrolled for less than a clock hour.

(c) *District Credited.* When two or more school districts authorized to establish schools of a different grade level operate such schools or classes and jointly employ personnel to administer and conduct the program, the attendance shall be credited to the several school districts appropriate to the authorized grade level of instruction.

Classes for Adults in State Institutions for Adults or in Any City, County, or City and County Jail, Road Camp or Farm for Adults. The Superintendent of Public Instruction, acting under the authority of and implementing Chapter 1073, Statutes of 1957, repealed Article 14.2 (Sections 129.40 through 129.45) of Chapter 1 of Title 5 of the California Administrative Code, relating to classes for adults in state institutions for adults or in any city, county, or city and county jail, road camp or farm for adults.

ADOPTION OF REGULATIONS BY DIRECTOR OF EDUCATION

Summer Session Tuition Fees. The Director of Education, acting under the authority of and implementing Education Code Section 20472, amended Section 947 of Title 5 of the California Administrative Code, relating to summer session tuition fees, to read as follows (effective June 1, 1958):

947. (b) *Amount of Summer Session Tuition Fees.* A summer session student shall pay a tuition fee of $9.50 per semester unit or fraction of a unit.

For Your Information

PAN AMERICAN DAY AND WEEK, 1958

As part of its efforts to foster closer ties with the other republics of the Western Hemisphere, the United States government is encouraging widespread observance of Pan American Day and Week again this year. The president has issued his customary Proclamation designating April 14 as Pan American Day and the period April 14 to 20 as Pan American Week. This will mark the sixty-eighth anniversary of the Pan American movement, which had its inception in the Organization of American States, formed in 1890, at the First Inter-American Conference held in Washington. The purpose of the Organization of American States is to achieve an order of peace and justice, promote American solidarity, strengthen collaboration among the member states; and defend their sovereignty, independence, and territorial integrity. The Pan American Union at Washington is the central, permanent organ and General Secretariat of the Organization. A special committee at the Pan American Union has prepared a kit of basic materials for use in planning for the observance of Pan American Day in schools, clubs, and other groups. Copies of these free materials are available from the Office of Public Relations, Pan American Union, Washington 6, D.C.

BUREAU OF SCHOOL AND COLLEGE PLACEMENT, UNIVERSITY OF CALIFORNIA, DAVIS

To provide for service to the Davis campus for its graduates in teacher education, an Office of Teacher Placement has been established to operate under the state-wide Bureau of School and College Placement of the University of California. J. Price Gittinger, Director of Special Services and Assistant Director of Relations with Schools, will be responsible for general supervision of the Davis office. Mrs. Alma Tittemore has been selected to initiate the work of the office which opened in February, 1958.

EXAMINATION FOR FIELD REPRESENTATIVE

The State Personnel Board has scheduled a state-wide examination on May 3, 1958, for the position of Field Representative in the Division of School Administration, State Department of Education, Sacramento.

Candidates should possess a California Elementary or Secondary Administrative Credential; and three years of full-time experience in an

administrative or supervisory position with responsibility for two or more system-wide programs, preparation of school budgets, accounts and records, or a major school house planning and construction program. The salary range for these positions is $676 to $821 per month.

Details about the examination and application forms may be secured from the State Personnel Board, 801 Capitol Avenue, Sacramento, California. Applications will be accepted until April 11, 1958.

SCIENCE TALENT SEARCH WINNERS

Honors have been awarded to 300 boys and girls with unusual potential scientific ability, in the seventeenth annual Science Talent Search conducted by the Science Clubs of America, for the Westinghouse Science Scholarships and Awards. The winners, from 15 to 18 years of age, who were selected from over 25,000 contestants, came from 35 cities in 19 states and the District of Columbia. Of the 40 winners invited to Washington, D.C. to attend the Science Talent Institute, the following four students are from California:

Rodney Carlos Kirk, 904 Evelyn Street, Albany. Albany High School.
Andy Kukla, 8409 Blackburn Avenue, Los Angeles. Fairfax High School.
Neil Logan Nininger, 24 Liberty Street, Larkspur. Tamalpais Union High School.
Robley Cook Williams, Jr., 1 Arlington Court, Berkeley. El Cerrito High School, Richmond.

In addition to the 40 winners, 260 students showed such promise that the judges recommended that they be awarded honorable mention, that their ranking in the contest be brought to public attention, and that colleges and universities be informed of their abilities. Of these, the following students are from California:

James Alfred Anderson, 12427 Rochedale Lane, Los Angeles. University High School.
Lon Edward Bell, 722 Walnut Avenue, Santa Cruz High School.
Charlotte Diane Cronander, 375 10th Avenue, San Francisco. George Washington High School.
Clive Randolph Matson, 1954 Camino Loma Verde, Vista. Vista High School.
James Lovell Scott, 447 Cumberland Drive, Walnut Creek. Pleasant Hill High School, Pleasant Hill.
Peter Gregory Speltz, 15812 Casimir Street, Gardena. Junipero Serra High School.
Henry Tan, 1230 E. Swift Street, Fresno. Roosevelt High School.
Stanley Richard Ulfeldt, 5415 Palm Drive, La Canada. John Muir High School, Pasadena.
James Wing-Fai Woo, 498 Funston Avenue, San Francisco. Lowell High School.

INFORMATION FOR HIGH SCHOOL STUDENTS ABOUT UNITED STATES ARMED FORCES

High School News Service Report is published monthly to inform high school students of their rights, privileges, responsibilities and opportunities in the armed services of the United States.

The *Report* is published by the High School News Services, Building 3109, Great Lakes, Illinois, and distributed free of charge to high schools requesting the service.

AMERICAN ACCOUNTING ASSOCIATION CAREER PAMPHLET

Young Eyes on Accounting, a career pamphlet developed by the American Accounting Association in co-operation with the American Institute of Certified Public Accountants and the Institute of Internal Auditors, is currently available to high school principals and counselors throughout the country. The pamphlet, which describes the varied opportunities offered by the accounting profession to qualified high school students, may be obtained in quantity and without charge by writing to the American Accounting Association, P. O. Box 3068, University Station, Columbus 10, Ohio.

CONSERVATION BOOKLET

The Soil Conservation Society of America, publishers of the *Journal of Soil and Water Conservation*, recently published a cartoon-style booklet entitled *Wonder of Water*, which is useful in the study of conservation of natural resources. The booklet is available from the Soil Conservation Society of America, 838 Fifth Avenue, Des Moines 14, Iowa. Single copies cost 20 cents each; quantity orders are available at a discount.

Professional Literature

PUBLICATIONS RECEIVED

BURTON, WILLIAM H. *Teaching.* Vocational and Professional Monograph Series, No. 12. Cambridge 38, Mass.: Bellman Publishing Co., 1957 (revised edition). Pp. 40. $1.00.

CAMPBELL, TOM. *The Iron and Steel Industry.* Vocational and Professional Monograph Series, No. 26. Cambridge 38, Mass.: Bellman Publishing Co., 1957. Pp. 40. $1.00.

Chemistry and Physics: An Outline of the Scope of Content and Related Understandings of the Courses of Study. Albany, New York: Bureau of Secondary Curriculum Development, University of the State of New York, State Education Department, 1957. Pp. 72.

CUTTS, NORMA E., and MOSELEY, NICHOLAS. *Teaching the Bright and Gifted.* Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1957. Pp. 268. $4.25.

FLORIO, A. E., and STAFFORD, G. T. *Safety Education.* New York 36: McGraw-Hill Book Co., Inc., 1956. Pp. 328. $5.50.

GATES, DORIS. *Helping Children Discover Books.* Chicago 10: Science Research Associates, Inc., 1956. Pp. 48. $0.50.

GRAMBS, JEAN D. *A Guide to School Integration.* Public Affairs Pamphlet No. 225. New York 16: Public Affairs Committee, Inc., 1957. Pp. 28. $0.25.

IRWIN, LESLIE W., and OTHERS. *Methods and Materials in School Health Education.* St. Louis 3: C. V. Mosby Co., 1956. Pp. 368. $4.50.

KRUG, EDWARD A. *Curriculum Planning.* New York 16: Harper & Bros., 1957 (revised). Pp. 336. $3.25.

POLLARD, HUGH M. *Pioneers of Popular Education, 1760-1850.* London: John Murray, Limited, 1956. Pp. 278. 28s.

Recreation in California: Ten Years of Progress, 1947-1957. Tenth Annual Report of the California State Recreation Commission. Publication 57-2, State of California Recreation Commission, February, 1958. Sacramento 14: State Recreation Commission (722 Capitol Avenue, Room 3076), 1958. Pp. 140.

Review of Financial Aspects of Salary Schedules: Outline of Procedure for Planning Salary Schedule and Budget Review. Research Bulletin No. 111, January, 1958. San Francisco 2: California Teachers Association, 1958. Pp. 36.

ROBERTS, ROY W. *Vocational and Practical Arts Education, History, Development, and Principles.* New York 16: Harper & Bros., 1957. Pp. 638. $6.50.

Salaries and Salary Schedules Reported for 1957-58. Research Bulletin No. 109, December, 1957. San Francisco 2: California Teachers Association, 1957. Pp. 60.

SIMMONS, HENRY T. *The Aircraft Industry.* Vocational and Professional Monograph Series, No. 94. Cambridge 38, Mass.: Bellman Publishing Co., 1958. Pp. 32. $1.00.

SPEARE, M. EDMUND. *The Coal Industry.* Vocational and Professional Monograph Series, No. 89. Cambridge 38, Mass.: Bellman Publishing Co., 1957. Pp. 32. $1.00.

SPEARS, HAROLD. *Curriculum Planning Through In-service Programs.* Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1957. Pp. 350.

STROUP, FRANCIS. *Measurement in Physical Education: An Introduction to Its Use.* New York: Ronald Press Co., 1957. Pp. 192. $3.50.

Survey of Salary Schedules in California School Districts. Research Bulletin No. 110, January, 1958. San Francisco 2: California Teachers Association, 1958. Pp. 30.

Ten Criticisms of Public Education. National Education Association Research Bulletin, Vol. XXXV, No. 4, December, 1957. Washington 6, D.C.: Research Division of the National Education Association, 1957. Pp. 129-176. $0.80.

THOMAS, LAWRENCE G. *Occupational Structure and Education.* Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1956. Pp. 502. $6.00.

TROPP, ASHER. *The School Teachers: The Growth of the Teaching Profession in England and Wales from 1800 to the Present Day.* New York 11: Macmillan Co., 1956. Pp. 286. $4.50.

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DIRECTORY OF THE CALIFORNIA STATE DEPARTMENT OF EDUCATION

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